

Fern Collecting in Haiti--II

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MISSION

Mission, a typical mountain village, consists of a few thatched huts and a whitewashed plastered gendarmery trimmed with the national colors, red and blue. Most of the inhabitants of this region live in scattered villages and come to Mission only on market days, to trade. The markets, indeed, are a very important feature of Haitian life, ranging, as they do, from the great markets of Port-au-Prince to small improvised ones along the roadway.

In the Mission region ferns were almost confined to two localities: one, a deep valley containing the "source," a small rapid creek utilized by the villagers for drinking and washing; the other, the wet thicketed upper slopes and summit of the La Selle range.

The upper portion of the Mission valley is V-shaped in cross-section, with its lower slopes covered by a dense growth of shrubs and small trees, and the upper slopes bearing at most a few scattered pines. A short distance from Mission the stream falls over a cliff about 60 feet high into a deep narrow ravine with vertical walls. Here the bed of the valley is filled with boulders and a thick growth of shrubs. The walls in some places are always wet with trickling water. Many ferns grow on the damp mossy rocks and in the rich soil at the base of the cliffs. Among these were: *Adiantum capillus-Veneris*, *Anopteris hexagona*, *Asplenium monteverdense*, *A. flabellulatum*, *Dennstaedtia globulifera*, *Dryopteris reptans*, *D. sancta*, *Nephrolepis cordifolia*, *Polypodium angustifolium*, *P. otites*, *P. squamatum*, *Selaginella Leonardii* (new), and *Tectaria hippocrepis*.

In addition, on the thicketed slopes above the falls were: *Asplenium cristatum*, *A. pseudoerectum*, *Didymo-*

chlaena truncatula, *Diplazium unilobum*, *Elaphoglossum longifolium*, *E. towarensense*, *Polypodium pectinatum*, *P. loriceum*, *P. vulpinum*, and *Polytaenium lineatum*.

Below the falls a half-mile or more the narrow valley opens, the stream and thickets disappear, and the bed and slopes gradually become arid. In these drier areas, where sufficient shade was afforded, grew: *Blechnum occidentale*, *Dryopteris oligophylla*, *D. patens*, *D. serra*, *Pityrogramma tartarea*, *Polypodium aureum*, and *Pteris longifolia*. *Polypodium crassifolium*, conspicuously perched on some tree or high boulder, was common.

The richest growth of ferns in the Mission region is found in the thickets of the upper slopes and summit of the La Selle range. Here fires, which too frequently are allowed to spread from new-made clearings, have entirely destroyed not only luxuriant fern thickets but valuable pine forests as well. The uninjured portions, watered by heavy dews and cloud mists, support a wonderful vegetation. At first sight the new and enthusiastic fern collector is held spellbound by the marvelous display. In one small thicket alone I found *Asplenium auritum*, *A. cyrtopteron*, *A. flabellulatum*, *A. salicifolium*, *A. serra*, *A. Sintenisii*, *Blechnum occidentale*, *Botrychium cicutarium*, *Diplazium Tussacii*, *Dryopteris alata*, *D. asplenoides*, *D. denticulata*, *D. effusa confinis*, *D. rudis*, *D. rupicola*, *Elaphoglossum muscosum*, *E. towarensense*, *Nephrolepis cordifolia*, *N. pectinata*, *Pityrogramma tartarea*, *Polypodium loriceum*, *P. piloselloides*, *Polystichum muricatum*, *Pteridium arachnoideum*, *Pteris hispaniolica* (new), and *Struthiopteris Tuerckheimii*. I left, feeling that many species yet remained undiscovered. *Cyathea Hieronymi*, a tree fern, was occasional hereabout.

The exhilarating coolness and freshness and the magnificent views make the summit of the La Selle mountains



PARTIALLY DENUDED UPPER SLOPES OF THE LA SELLE RANGE, NEAR MISSION. THE TALL ISOLATED TREES ARE PINES, THE REMNANTS OF LARGE FORESTS WHICH ONCE COVERED THE SUMMITS OF THE MOUNTAINS, BUT HAVE BEEN DESTROYED BY FIRES

superbly delightful. In the early morning, nothing is visible from these heights but the level white surface of a vast cloud lake. Later in the day the clouds rise and sweep the upper mountain slopes in waves of misty white fog, so thick that one can hardly keep the trail. (It is an easy matter to become lost if the forks are not well marked, and a wrong slope might mean a day's trip back to camp.) Finally, forming a mantle above the brow of the mountain or disappearing altogether, they disclose a wonderful panorama of the surrounding country to the north. Hundreds of square miles, including a large portion of the Cul-de-Sac, the three inland lakes—Saumatre, Enriquillo, and Limon—and many of the lower mountain ranges, are spread out in one vast relief map.

Our camp, at a much lower level near Mission, was not so pleasant. Aside from our cook's drunken fits and his threats of desertion we were pestered by numerous small flealike insects. The eggs planted by these pests, on hatching, filled our feet with masses of minute voracious larvae which had to be cut out to afford relief from pain. In spite of these inconveniences it was not without regret that we found it necessary after a stay of two weeks to leave what we felt to be an unfinished field.

FURCY

From Mission we retraced our route to Port-au-Prince and, after re-outfitting, proceeded to Furcy, a tolerably well known locality in the mountains some 15 miles west of Mission.

No one ever dies at Furcy; at least that is what the natives told us. Once established in the savage luxury of Fontenau's thatched hut nestled among the plantain and coffee trees, we could well believe this saying. Our

work in this region proved to be the most pleasant and productive part of our six months trip.

Furey is a small collection of huts lying on a mountain spur (altitude about 4,300 ft.) which branches southward from what we believed to be Morne Tranchant. The summit of the spur is nearly flat, but its slopes are steep. The entire region, cleared for a long time past and mostly under cultivation, is noted chiefly for its peas. The uncultivated areas consist of bluegrass meadows and bracken thickets, with scattered clumps of shrubs. The soil, a red clay, seems to be rather deep on the summit but is shallow on the slopes, with frequent exposures of the underlying rock. Numerous small ravines furnish protection for an abundant growth of ferns. One near our house sheltered the following species: *Asplenium praemorsum*, *Blechnum occidentale*, *Botrychium cicutarium*, *Dennstaedtia ordinata*, *Diplazium Fuertesii*, *D. hastile*, *Dryopteris rupicola*, *Elaphoglossum tectum*, *Nephrolepis cordifolia*, *Polypodium aureum*, *P. loriceum*, *P. vexatum*, and *Polystichum triangulum*. The common species of the bracken thickets were *Dicranopteris flexuosa*, *D. furcata*, *Dryopteris oligocarpa*, *Lycopodium Fawcettii*, *Pteridium arachnoideum*, and *Struthiopteris Tuerckheimii*.

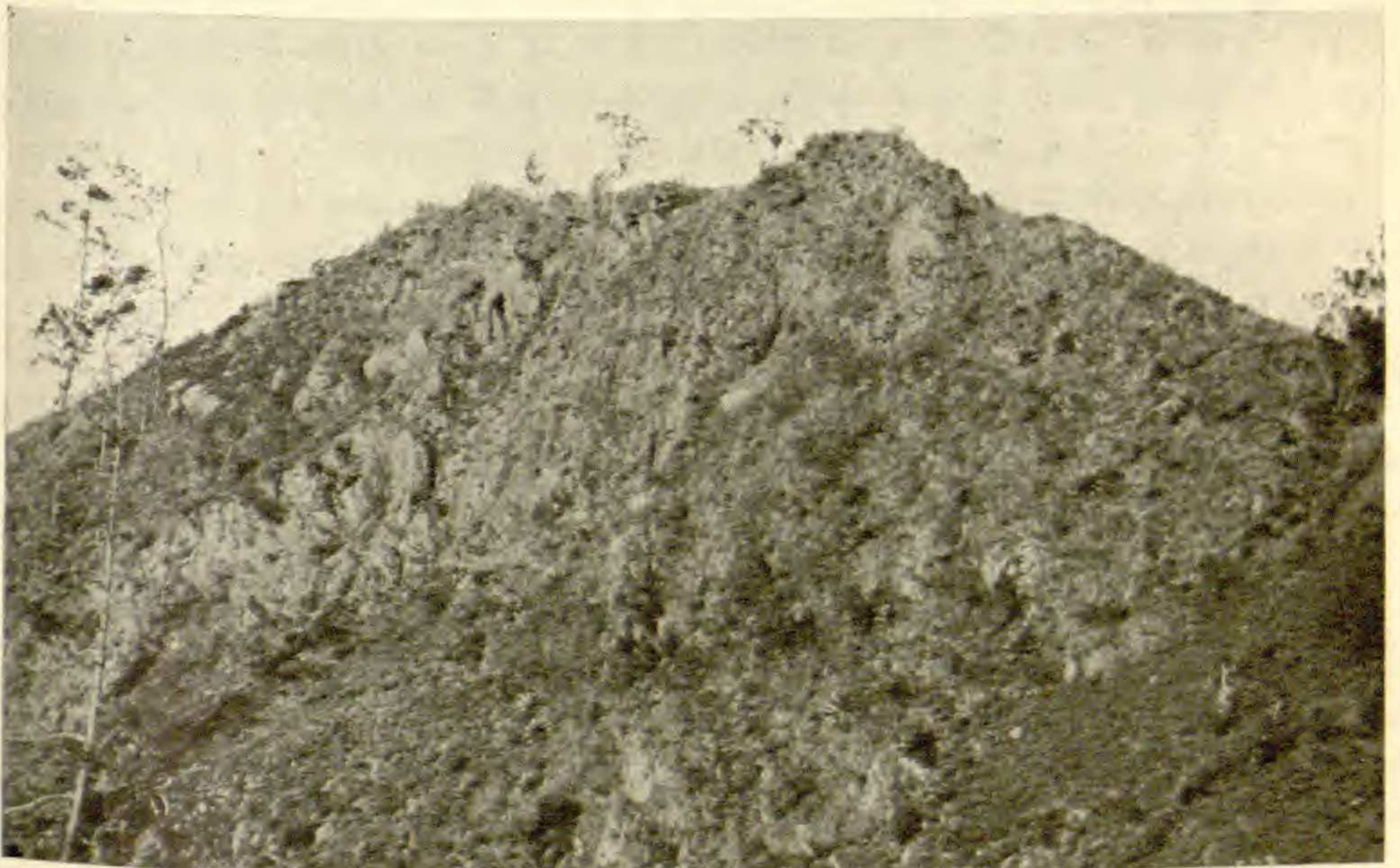
A mountain stream, called locally "La Grande Rivière," flows through a deep valley which separates a portion of the Furey spur from Pic-de-Brouet. This stream was an almost uninterrupted series of cascades, rapids, and deep pools, bordered by small meadows and damp cliffs. Here, in addition to the ferns already listed from the higher slopes, were: *Adiantum cristatum*, *Anemia phyllitidis*, *Anisosorus hirsutus*, *Diplazium unilobum*, *Dryopteris pedata*, *Dryopteris patens*, *D. asplenoides*, *D. pubescens haitiensis*, *Equisetum giganteum*,

Pityrogramma tartarea, *Polypodium angustifolium*, *P. otites*, *Polystichum polystichiforme*, *Pteris quadriaurita*, and *Trichomanes Krausii*.

Pic-de-Brouet is the culminating point of a range bridging Furcy and Nouvelle Touraine, which is one of the main ranges of the La Selle group. The peak itself, as well as the very steep northern slope, is rocky and with little vegetation, but the wet southern and western slopes, although less steep, are covered with a dense growth of small trees and shrubs. Numerous narrow ravines cut the lower portions of Pic-de-Brouet. The summits of the intervening spurs thus formed are usually open or with scattering pines, while the slopes and beds of the ravines are clothed with nearly impenetrable mossy thickets that abound in ferns. Among the species collected in this region are the following: *Adiantum cuneatum*, *Alsophila quadripinnata*, *Anemia hirsuta*, *A. phyllitidis*, *Anogramma chaerophylla*, *Asplenium abscissum*, *A. auritum*, *A. cristatum*, *A. monanthes*, *A. monteverdense*, *A. praemorsum*, *A. pseudoerectum*, *A. salicifolium*, *A. serra*, *Blechnum occidentale*, *Botrychium cicutarium*, *Cyathea asperula*, *Cheilanthes Leonardii* (new), *C. micromera*, *Dennstaedtia ordinata*, *D. globulifera*, *Diplazium unilobum*, *D. Fuertesii*, *D. hastile*, *D. Leonardii* (new), *D. Tussaci*, *Dryopteris Abbottiuna* (new), *D. asplenoides*, *D. effusa confinis*, *D. Germaniana*, *D. oligocarpa*, *D. pachyrachis*, *D. patula*, *D. pubescens haitiensis*, *D. rudis*, *D. rupicola*, *Elaphoglossum huacsaro*, *E. plicatum*, *E. simplex*, *E. towarensense*, *E. tectum*, *Hymenophyllum axillare*, *H. fucoides*, *H. microcarpum*, *H. sericeum*, *Hypolepis hispaniolica* (new), *Lycopodium cernuum*, *L. clavatum*, *L. dichotomum*, *L. reflexum*, *L. taxifolium*, *Nephrolepis cordifolia*, *Notholaena bonariensis*, *Odontosoria aculeata*, *Pityrogramma schizophylla*, *P. sulphurea*,



A GROVE OF PALMS NEAR FOND PARISIEN, WHERE SEVERAL SPECIES OF
DRYOPTERIS GREW IN ABUNDANCE



THE ISOLATED MOUNTAIN KNOWN AS PIC DE BROUET. THE UPPER LIMITS OF
THE FERN-BEARING THICKETS ARE SHOWN IN THE FOREGROUND.

THE SLOPES ABOVE ARE DRY AND ROCKY
(*Courtesy of the Smithsonian Institution*)

P. tartarea, *Polypodium angustifolium*, *P. aureum*, *P. crassifolium*, *P. cultratum*, *P. lanceolatum*, *P. lasiopus*, *P. leucosticton*, *P. otites*, *P. oxypholis* (new), *P. pectinatum*, *P. plumula*, *P. rigens*, *P. squamatum*, *P. vexatum*, *P. vulpinum*, *Polystichum echinatum*, *P. machaerophyllum*, *P. polystichiforme*, *P. triangulum*, *Polytaenium lineatum*, *Pteris podophylla*, *P. quadriaurita*, *Struthiopteris Tuerckheimii*, *Trichomanes Krausii*, *T. radicans*, and *Vittaria filifolia*.

PETIONVILLE

Following our six weeks collecting at Furcy we visited Petionville, a suburb of Port-au-Prince, lying about five miles to the east, in the dry foothills bordering the Cul-de-Sac. Here, while awaiting a boat homeward bound, we found a fair number of ferns. In one narrow ravine whose bed was filled with rocks under which flowed a large spring, ferns of the *Adiantum melanoleucum-Pteris longifolia* association grew abundantly. Along another stream flowing westward to Port-au-Prince were profuse stands of *Tectaria heracleifolia* and *T. martinicensis*, and with them the following: *Adiantum cristatum*, *A. tenerum*, *Asplenium dentatum*, *Dryopteris normalis*, *D. patens*, *D. reptans*, *D. serra*, *D. tetragona*, and *Notholaena trichomanoides*. *Anemia adiantifolia* was found commonly in the arid foothills, and with it an occasional plant of the rare *Asplenium dimidiatum*.

GONAVE ISLAND AGAIN AND THE TRIP HOME

We availed ourselves, at the last moment, of an opportunity to revisit Gonave Island, and spent a week at Pikmi, a fishing village on the southeastern coast. In a large well-watered ravine not far inland we added to our list *Dryopteris scolopendrioides* and *Pteris grandifolia*.

July 23 found us at last on board the S. S. Advance, bound for New York. Before leaving Haiti our ship touched at several ports—Petite Goave, Port-du-Paix, and Cape Haitien—to take on coffee, cotton, and honey. At Cape Haitien we spent a few hours ashore, and on a short trip just outside the city found, new to our collections, *Adiantum villosum*, *Anemia Underwoodiana*, *Lygodium polymorphum*, and *Pteris biaurita*.

Evidently our trip was a success. We collected in all nearly 10,000 specimens of plants, representing 2,608 numbers, as well as a quantity of land shells and insects. In addition Dr. Abbott prepared 201 bird skins, besides alcoholic specimens and skeletons. Some of the plants are of unusual interest as verifying the existence of certain old doubtful species described and rather crudely illustrated by Plumier in the latter part of the 17th century, while many others are noteworthy as coming from the type localities of species collected by more recent botanical explorers, prominent among whom are Raunkiaer, Buch, and Eggers. A fair number of their plants are in the U. S. National Herbarium.

In the identification of the flowering plants much valuable aid was given by Dr. I. Urban of Berlin, the well-known authority on West Indian botany. Most interesting among those named by him are *Arcoa gonavensis* and *Leonardia haitiensis*, both representing new genera as well as new species. He described, in addition, the following new species and varieties: *Abutilon Leonardi*, *Begonia Abbottii*, *Coccoloba neurophylla*, *Croton chaetodus gonavensis*, *Croton organifolius abbreviatus*, *Diclip-tera obtusifolia ciliifera*, *Galactia rudolphoides haitiensis*, *Guettarda spinifera*, *Isodorea Leonardi*, *Lyonia furcyensis*, *Malpighia micropetala*, *Marsdenia dictyophylla*, *Salvia Abbottii*, and *Tabebuia gonavensis*. Be-



TWO CHARACTERISTIC LOWLAND FERNS ALONG THE HALF-SHADED BANKS OF A SMALL STREAM NEAR PETIONVILLE. THE ONE WITH COARSELY DIVIDED BLADES IS *TECTARIA HERACLEIFOLIA*. THE OTHER, IN THE BACKGROUND, IS *ADIANTUM CRISTATUM*

sides, these, seven species of Piperaceae have been indicated by Prof. William Trelease as new. A large and peculiar tree cactus found abundantly in the Cul-de-Sac region was associated by Dr. J. N. Rose with an old illustration of Plumier's and was renamed *Neoabbottia paniculata*.

Partial sets of our plants were sent also to the New York Botanical Garden and the Gray Herbarium.

The pteridophyta totaled over 600 numbers, representing about 170 species. They have been identified chiefly by Dr. William R. Maxon, who has published several short papers in which some of the new species have been described and other interesting ones have been listed, as, for example, *Polypodium vulpinum*, known hitherto only from Brazil, and *Dryopteris alata*, a Haitian species first named by Linnaeus which except for crude illustrations had remained unknown for over 200 years. With further exploration more of these puzzles will be cleared up and without doubt many additional species not now known from Haiti will be found. From the standpoint of the fern collector most of the dryish lowlands and foothills regions are unpromising; it is the mountain territory, of which wide areas are wholly unexplored, that will yield the more interesting results, and in these regions there is ample opportunity for work for many years to come. Not all the species I collected are mentioned in the present paper; a complete enumeration, with critical notes, habitat data, and citation of numbers, is in preparation by Dr. Maxon.

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